

SNC
Emerging Technologies
Subcommittee
February 17, 2011
NG911 Options for the State of Michigan

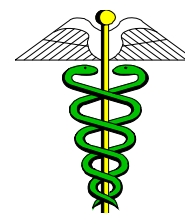
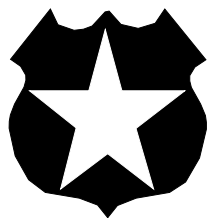
Pat Thetford
Regional Vice President
AT&T Public Safety Solutions

Agenda

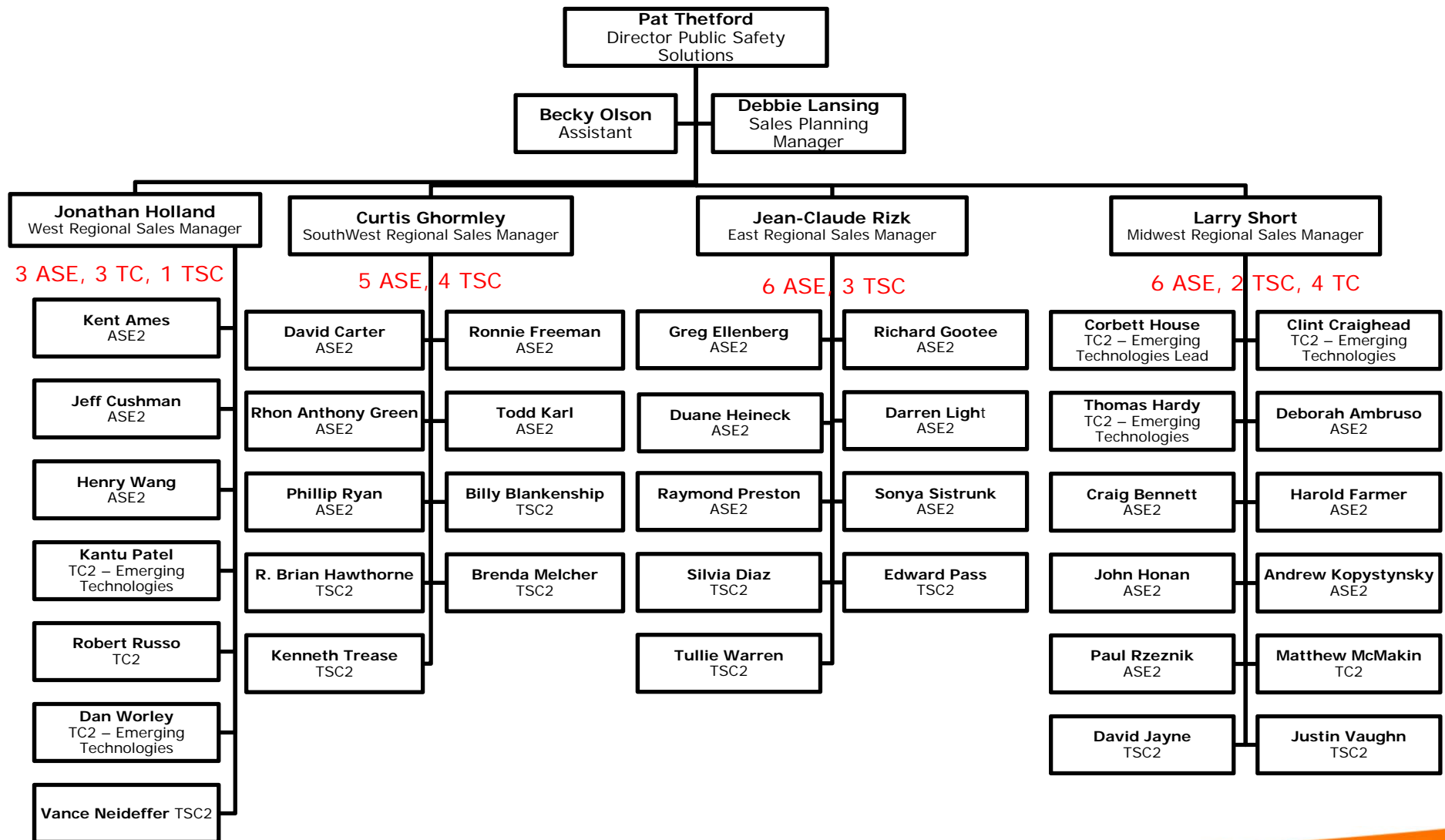
- **Introductions**
 - AT&T / MCDA
- **Current 9-1-1 environment**
- **NENA I3 / Impact on Michigan Direction**
- **Next Generation Call Handling Solutions**
 - Service Delivery Models
- **Next Generation 9-1-1 Networks**
 - Operational and Service delivery alternatives
 - Next Generation Call Routing and Data Delivery
- **NG9-1-1 activities outside of Michigan**
- **Challenges in Michigan**
- **Next Steps**

AT&T Commitment to Public Safety

AT&T offers a comprehensive suite of solutions to meet the needs of any public safety call center regardless of size, including leading-edge networks, comprehensive 9-1-1 database services, professional support systems and a wide variety of CPE packages including next generation IP-enabled controllers, intelligent workstations, time synchronization, mapping, and computer-aided dispatch. AT&T delivers fully integrated, end-to-end emergency response solutions.

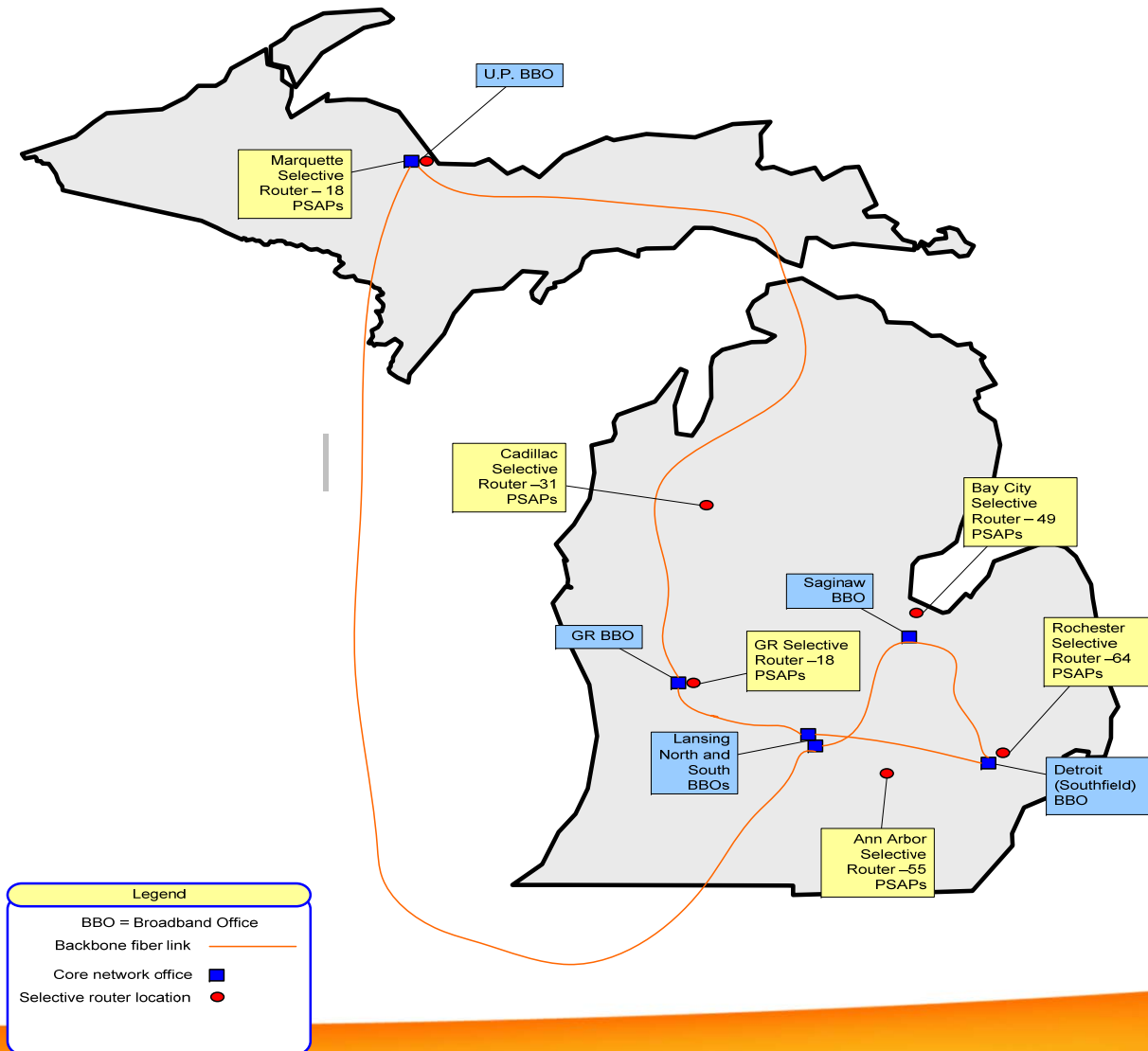


2011 Public Safety Solutions

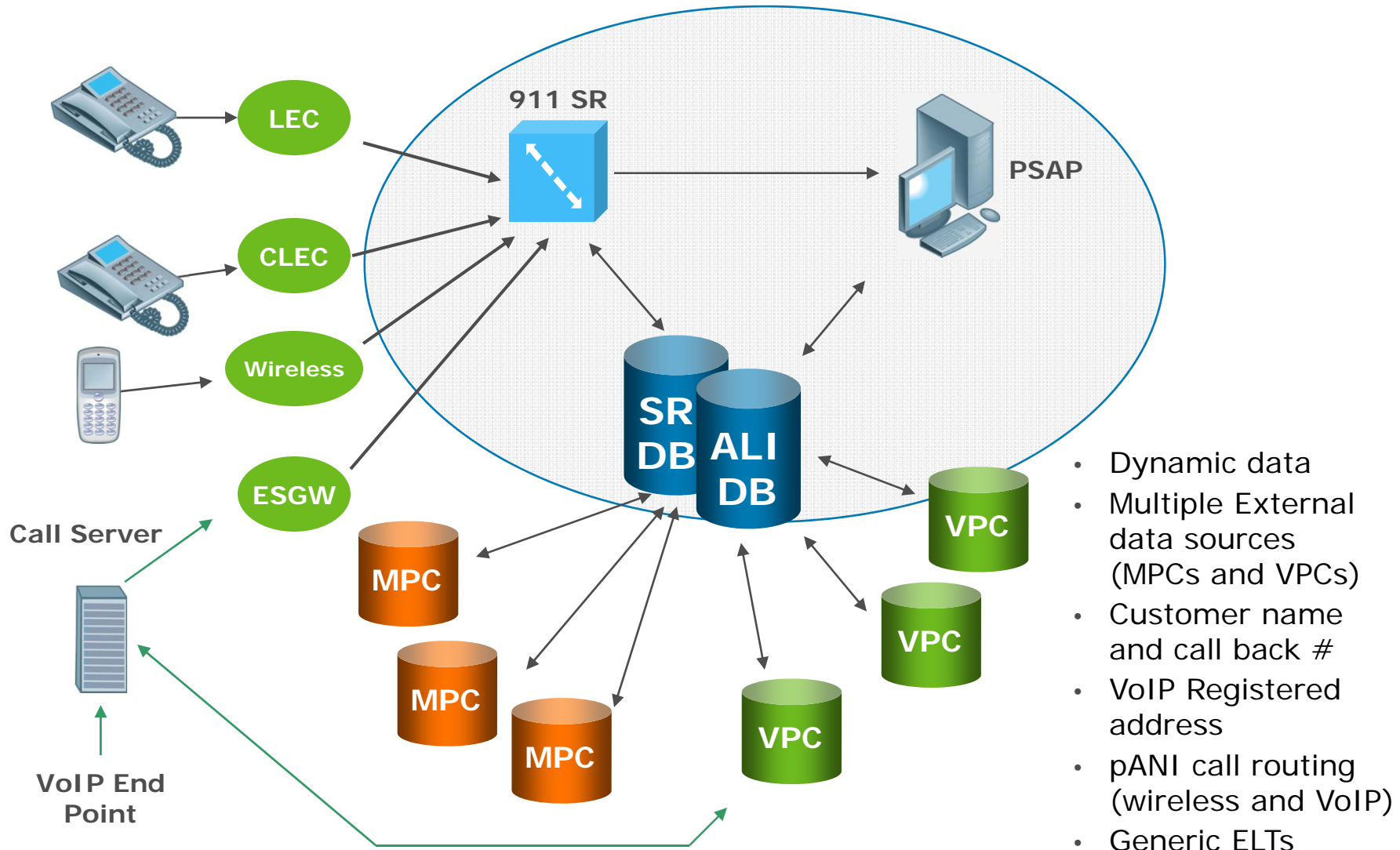


Michigan Current Environment

Current Michigan Tandem Environment



Michigan 9-1-1 Network - Today



NENA i3

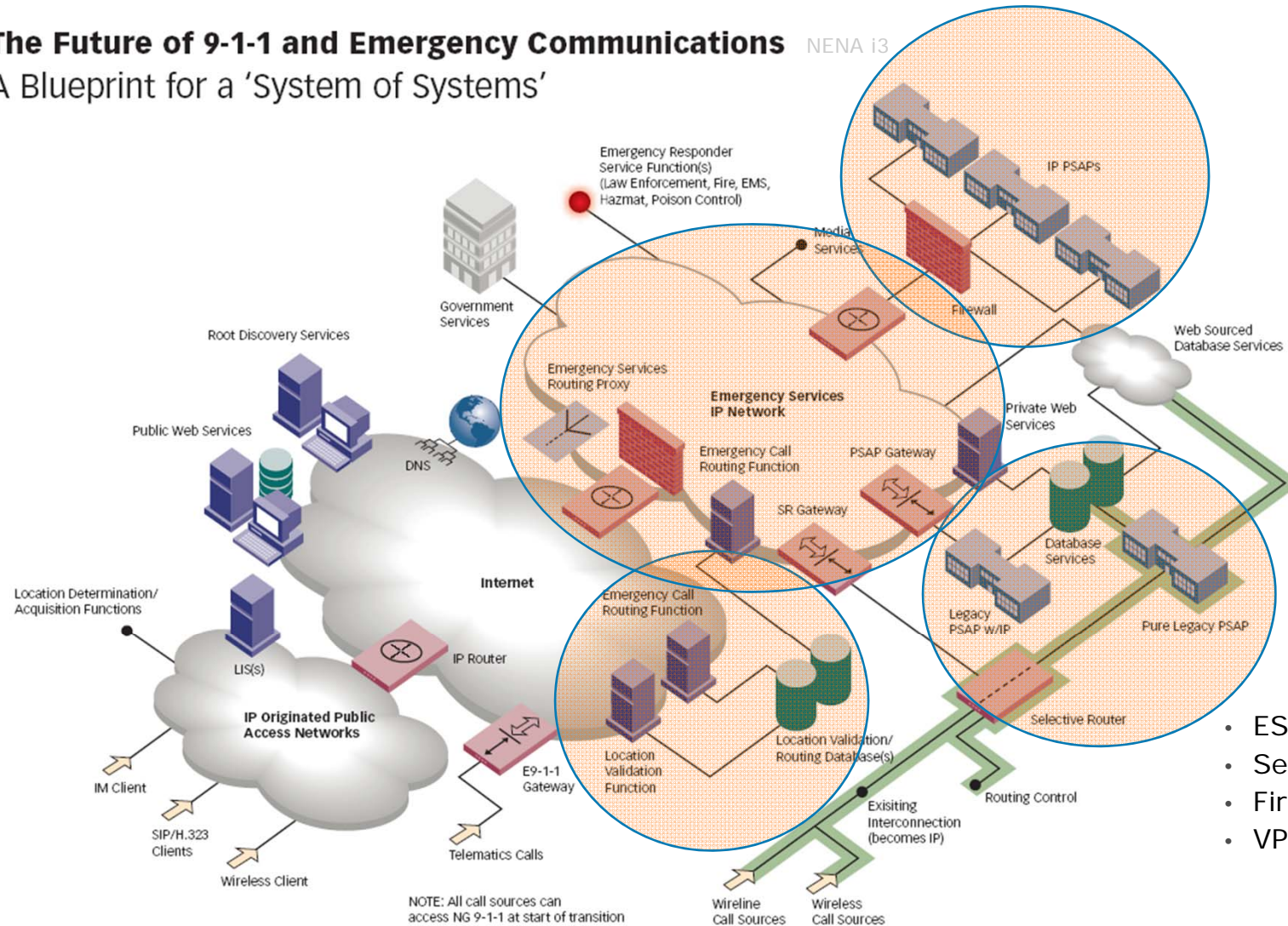
© 2008 AT&T Intellectual Property. All rights reserved.
AT&T, AT&T logo and all other marks contained herein are trademarks
of AT&T Intellectual Property and/or AT&T affiliated companies.



9-1-1 Network – A Few Years From Now

The Future of 9-1-1 and Emergency Communications

NENA i3
A Blueprint for a 'System of Systems'



NENA i3

- Basic network with function to support NG9-1-1
- Location information is delivered with call
 - Stays with call
- All calls are SIP or converted to SIP
- COTS equipment
- PSAPs are located anywhere on a commonly available IP network if desired
- Access to information and ALL call types (text/IM, voice and video)
 - All calls are routed to the correct PSAP with common queuing and location information

ATT solution as aligned with NENA i3

Software based – soft-switch

GIS based call routing

Extensive use of SIP

Nothing proprietary

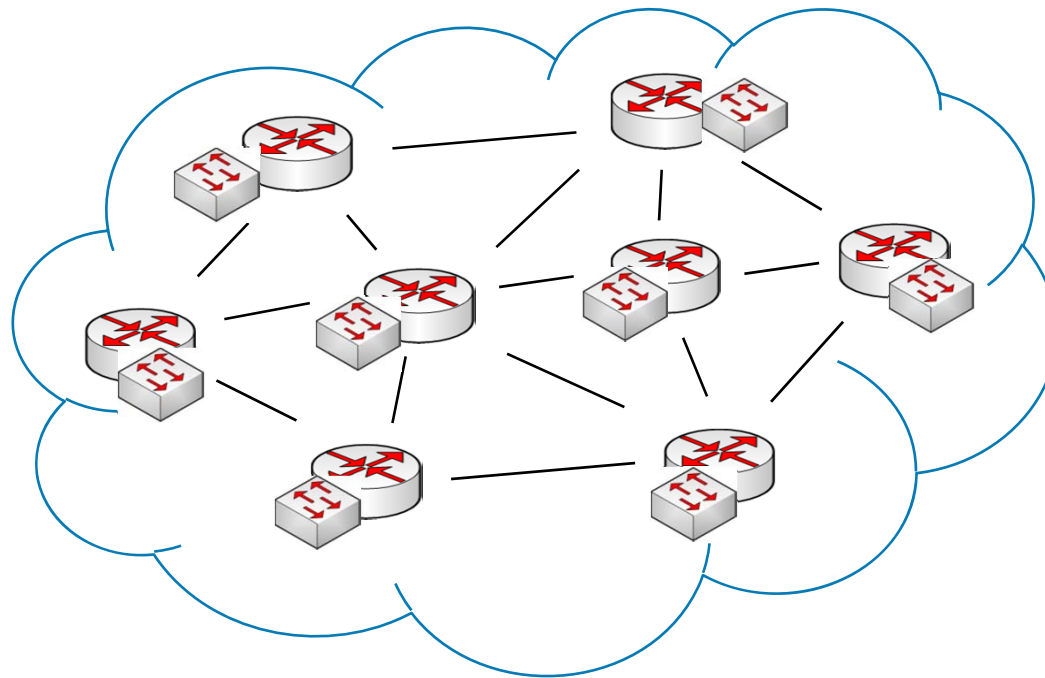
All common off the shelf components

Customer IT can MAINTAIN/SUPPORT

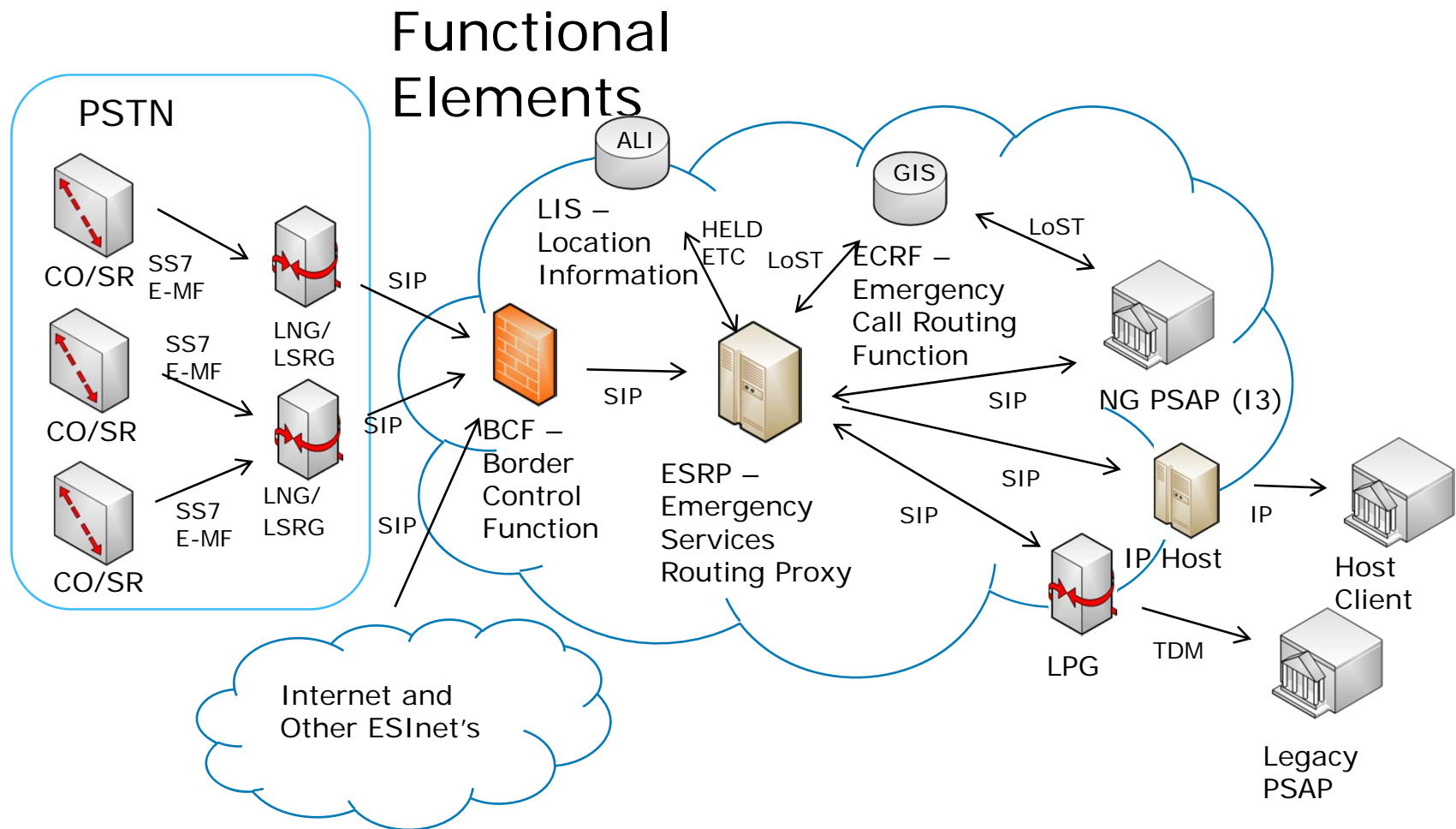
i3 ESI net

Transport

- The network is typically a highly reliable combination of physical service types and providers.
- Cisco routers and switches are used throughout.
- It can incorporate and interface with other networks.
- All routing protocols and L2/3 traffic separation supported.



i3 ESI net



ICE (Industry Collaboration Event) Tested

Helped Introduce the idea of “plug fests” for NG9-1-1 to the NENA Next Generation Partnership Program.

Provide leadership in ICE planning and testing.

Specific ICE activity

First ICE was held at Texas A&M in November 2009.

Nearly 20 vendors participated in the first ICE.

All major i3 routing and core components tested for interoperability.

microDATA achieved integration with most other vendors equipment and solutions.

Both AT&T and microDATA are committed to future ICE tests.

ICE 2 was held at the AT&T CFL in Irving, TX – focus was transition

ICE 8 and ICE 3 are being planned now – ICE 8 is recording and ICE 3 is location related technologies (LoST, LIS, ESRP etc)

Next Generation Call Handling and Delivery

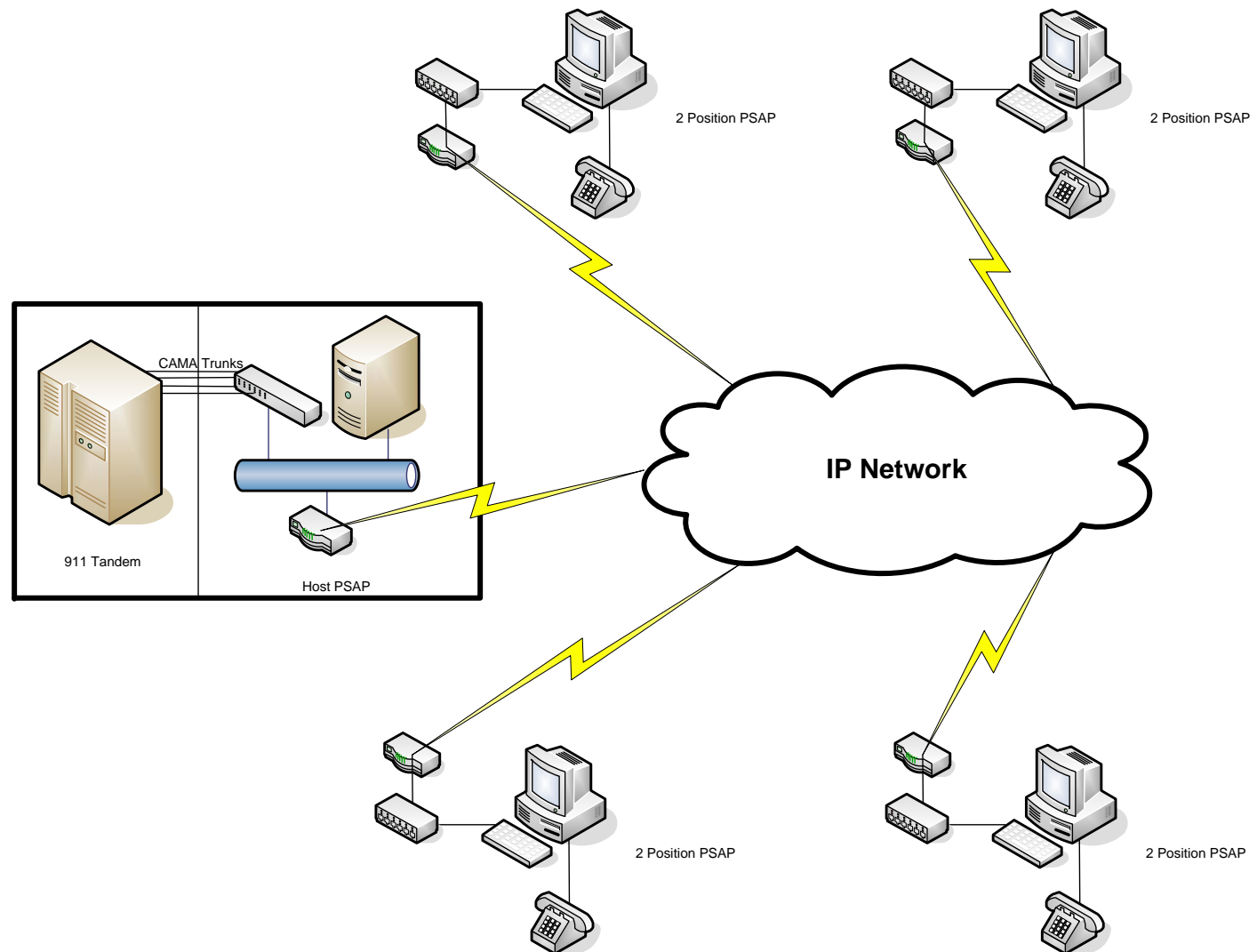
Premises Based vs. Service Provider Based

Premises Based Call Handling

Individual Hosts vs. Centralized Architecture

- Traditional Purchase/Implementation Model
 - End user owns asset
 - System installed at each PSAP
- Must be IP Enabled
- Should be I3 Enabled

Centralized Solution



Service Provider Hosted Call Handling

- Leverages IP Connectivity Capability
- Asset can be owned or leased – reduce capital requirements
- Reduced Number of CPE Controllers
- Secondary Layer of Interoperability
- Centralized Partitioned MIS
- Centralized Maintenance

NextGen Based Call Handling Equipment

Positron VIPER

PlantCML (All products – nGen)

microData xt911

Solacom Guardian

Features

- Session Initiation Protocol (SIP) for the delivery of voice
- Allows for remote positions
- Integrates with customer PBX
- Backroom servers deployed redundantly
- Designate alternate handling for remote answering position calls

NextGen Based Call Handling Equipment – Cont.

Benefits

- Fully featured IP-based incident response system
- Backroom equipment can be located at a centralized location
- Dynamic add-in of new call-taking positions
- All components are fully redundant and highly fault-tolerant
- Optional geographic redundancy

NextGen Based Call Handling Equipment – Cont.

E9-1-1 Hosted Services

Features

- Available with Plant Sentinel and Positron VIPER equipment
- AT&T Hosted (call processing at AT&T hosted locations)

Benefits

- Improved routing, redundancy, and disaster capabilities
- Reduces upfront costs for PSAPs
- Reduces the amount of equipment to be maintained at the PSAP

NG 911 Call Routing / Data Delivery

AT&T Next Generation Development

- Participate and contribute to development of standards
 - Key policy board leaders and contributors
 - Extensive ATT Public Safety participation nationwide
- Real World Proof of Concept Development
 - Joint development with progressive customer
 - Successful test end to end 9-1-1 call flow, including PIDF-LO
- Recent ESInet contracts
 - Brevard County, Florida
 - Palm Beach County, Florida
- Variety of Customers Nationally exploring ESInet with ATT

ATT ESI net Design Overview

- **No single point of failure,**
 - **Geographic diversity** - two ESINet data centers located at separate AT&T facilities.
 - AT&T Emergency Calling Data Centers (ADCs) perform the functions of a **NENA i3 Emergency Services Routing Proxy (ESRP)**
 - applies user permissions, stores call history and system data, provides web-based reports to validated users on IP SR (call volumes, call types, etc.) and performs other critical functions.
- **AT&T's ESI Net Services solution will interface with any (and multiple if required) legacy 9-1-1 databases.**
 - While AT&T is happy to provide 9-1-1 database services, this is not a requirement for AT&T ESI Net Services. ESI Net Services also interfaces with next generation 9-1-1 databases including LIS, ECRF and ESRP.

NextGen Networks

AT&T Emergency Services IP Network (ESInet)

Features

- End to End IP based solution
- Integrates ALI data with Voice for delivery to the PSAP
- Native SIP with PIDF-LO to IP capable PSAPs
- IP enabled transport (State IP Networks, SONET, MPLS, AVPN, EVPN)
- Network of Networks
 - Legacy Networks, Local/Regional Networks, other NG Networks

NextGen Networks - Continued

AT&T Emergency Services IP Network (ESI Net)

Benefits

- Interfaces with legacy TDM or IP PSAPs
- Replaces legacy Selective Router
- Provides Redundancy and Diversity
- Improved survivability
- Facilitate information sharing

ATT ESInet Highlights

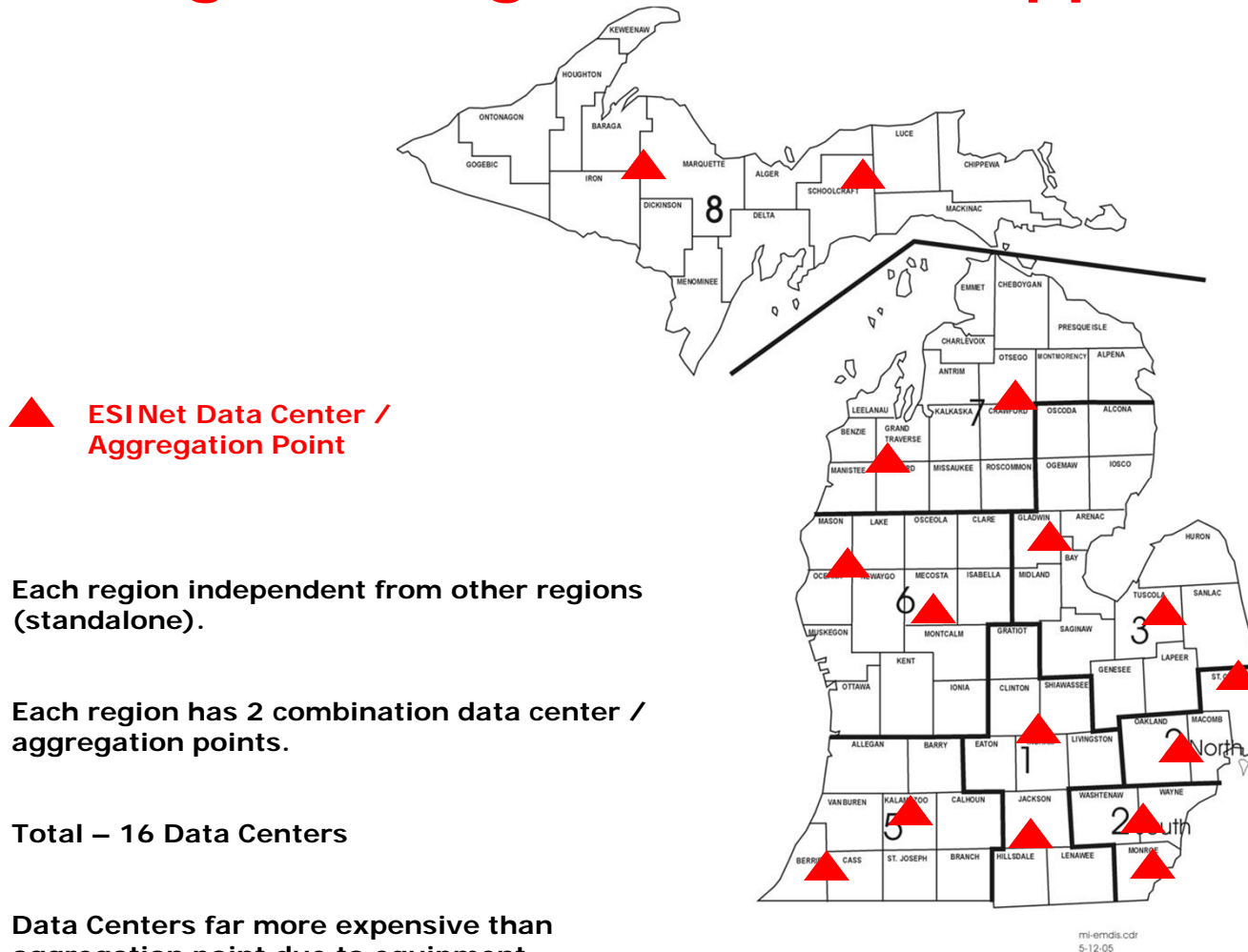
- Geographically diverse, IP-enabled call routing and call delivery Emergency Services Internetwork (ESInet)
 - AT&T's next generation ESInet Call Routing
 - Geographically redundant Hosts in fortified structures
 - Conversion Gateways – convert TDM PSTN to IP
 - System support from the AT&T E9-1-1 Service Assurance Center
 - 24x7x365 system monitoring
 - Single vendor point of contact for E9-1-1 systems, routing and network services
 - Professional installation, project management, and training for all phases of the project

Potential Michigan ESI net Designs Regional vs. Statewide

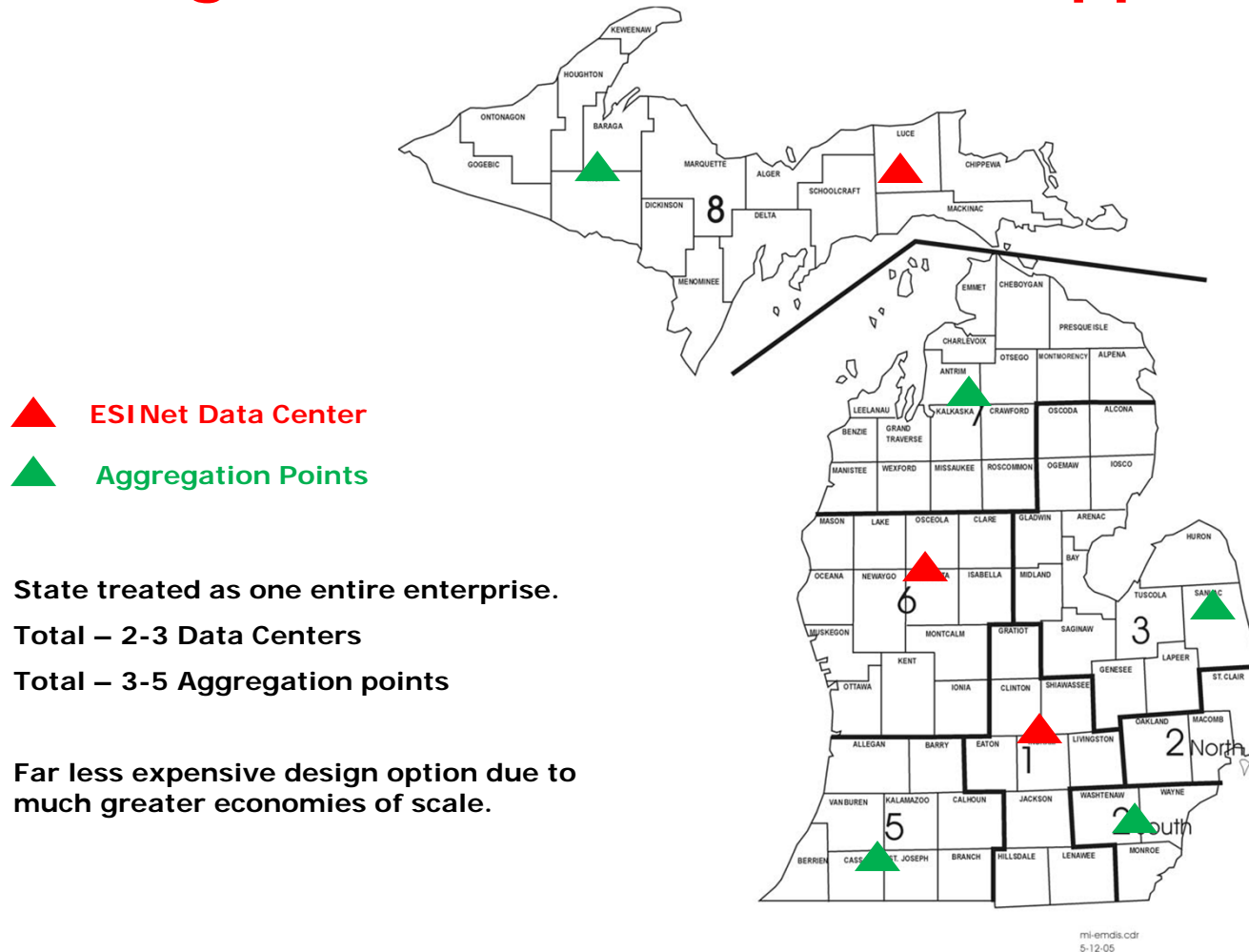
© 2008 AT&T Intellectual Property. All rights reserved.
AT&T, AT&T logo and all other marks contained herein are trademarks
of AT&T Intellectual Property and/or AT&T affiliated companies.



Michigan – Regional ESI Net Approach



Michigan – Statewide ESI Net Approach



Call Routing Options

- Legacy: ANI/ESRK/ESRD/ESQK
- Legacy: NPA-NXX
- Legacy: Trunk or Trunk Group
- NG: Origination point ID
- NG: PIDF-LO by value
- NG: PIDF-LO by reference
- Transitional: Spatial Routing based on LAT/LON from ALI
- Transitional: Spatial Routing based on civic address from ALI
- Legacy/NG: Class of service

Multiple Routing Schemes

- ***Routing on Phase II initially presented:*** AT&T's ESInet can be configured to route based on the ALI received. Thresholds on timeouts are configurable.
- ***Routing of calls to a particular PSAP for a special event:*** AT&T allows the GIS polygon routing data to be altered to adjust on-the-fly for special events. Adjusting the GIS data immediately updates the routing.
- ***Routing of calls to a particular Position for a special event:*** AT&T can route calls to a particular PSAP and can provide additional data in the SIP header that can allow the CPE to determine which position should receive the call based on the CPE ACD.
- ***Routing 911 calls in response to a catastrophic event:*** AT&T's ESInet can redeliver ongoing calls to an alternate PSAP if an entire PSAP is lost in a catastrophic event.
- ***Routing of calls to specific call-takers or group of call-takers based on the location of the caller:*** AT&T allows the county to adjust the GIS data on the LoST servers; this will directly affect subsequent routing of calls to the correct PSAP.

Sample Implementation Plan

- Install initial ESINet softswitch in designated location(s)
- Install additional SS7-IP gateways at defined aggregation points
- Install edge devices at each participating Michigan PSAP
- Implement IP connectivity among aggregation points and ADCs
- Add IP bandwidth to each participating Michigan PSAP
- Connect Softswitches to legacy tandems
- Develop routing schemas for each PSAP – primary, default, overflow, alternate, etc.
- Deploy MSAGs and pANIs in ALI Database(s)
- Establish new pANI ranges as required
- Begin moving wireless, wireline and nomadic VoIP 9-1-1 calls from legacy tandems to ESI Net
- Implement on a carrier by carrier basis
- Test, test, test

NG911 Activities

National Projects/Initiatives

- State Initiatives/RFPs
 - Connecticut
 - ESINet and Call Handling for all PSAPs in State
 - Alabama
 - ESINet
 - California
 - Kentucky
 - North Carolina
 - Tennessee
- County Initiatives/RFPs
 - Palm Beach and Brevard Counties (FL)
 - Countywide ESINet and Call Handling for 12-18 PSAPs
- COGs Initiatives/RFPs
- Hosted Call Handling
 - Oklahoma
 - Indiana
 - Texas
 - Kansas



at&t

Thank You!